

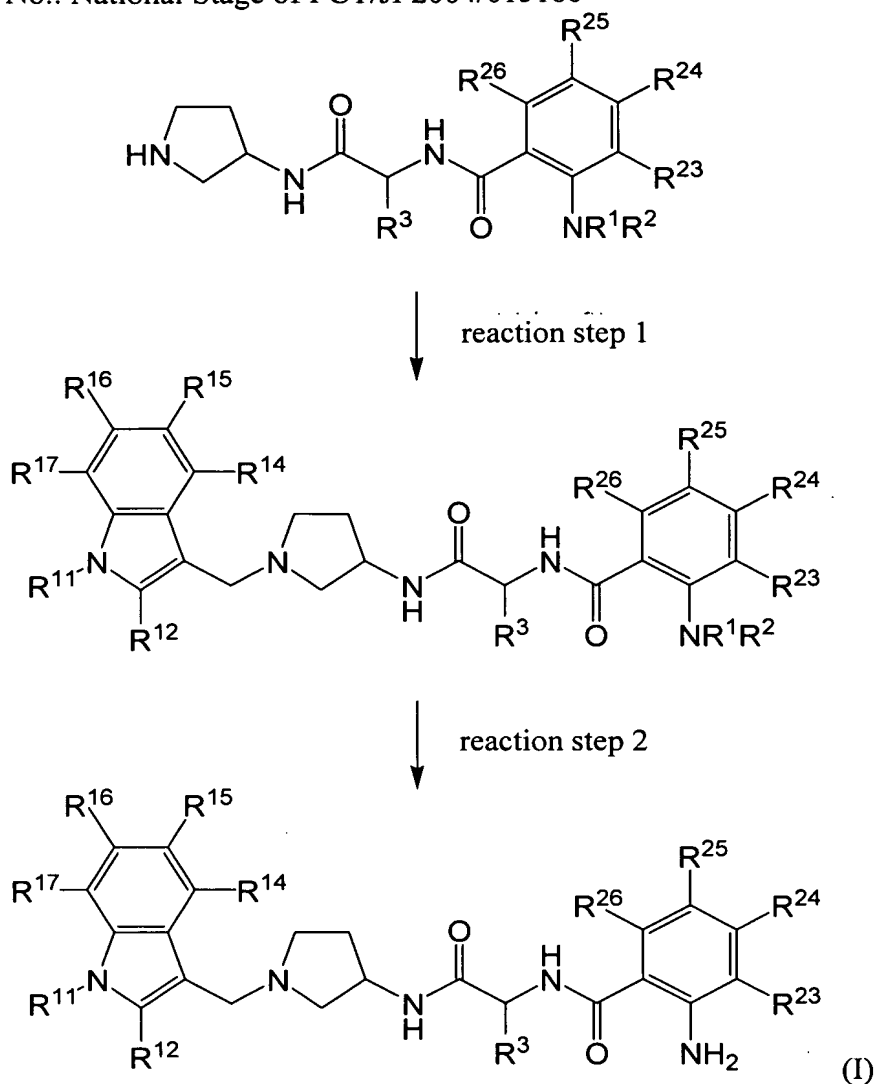
Preliminary Amendment  
Appln. No.: National Stage of PCT/JP2004/015186

## AMENDMENTS TO THE CLAIMS

**This listing of claims will replace all prior versions and listings of claims in the application:**

### LISTING OF CLAIMS:

1. (original): A producing method for aminopyrrolidine derivatives or salts thereof comprising reaction steps 1 and 2 represented by the following reaction formula (I) with the proviso that reaction step 2 is unnecessary if both R<sup>1</sup> and R<sup>2</sup> are hydrogen:



wherein  $R^1$  and  $R^2$  represent independently hydrogen or a protecting group for amino group  
 (wherein  $R^1$  and  $R^2$  may, taken together, form a cyclic structure);

$R^3$  represents hydrogen or  $C_1$ – $C_6$  alkyl;

$R^{11}$  represents hydrogen,  $C_1$ – $C_6$  alkyl or  $C_2$ – $C_7$  alkanoyl;

$R^{12}$ ,  $R^{14}$ ,  $R^{15}$ ,  $R^{16}$  and  $R^{17}$  represent independently hydrogen, halogen, optionally halogenated  
 $C_1$ – $C_6$  alkyl, optionally halogenated  $C_1$ – $C_6$  alkoxy, hydroxyl or  $C_2$ – $C_7$  alkoxy carbonyl; and  $R^{23}$ ,

$R^{24}$ ,  $R^{25}$  and  $R^{26}$  represent independently hydrogen, halogen, optionally halogenated  $C_1-C_6$  alkyl, optionally halogenated  $C_1-C_6$  alkoxy or hydroxyl.

2. (original): The production method according to claim 1, wherein the protecting group for amino group as  $R^1$  or  $R^2$  is methoxycarbonyl, *t*-butoxycarbonyl, benzyloxycarbonyl, allyloxycarbonyl, formyl, acetyl, benzoyl, methyl, ethyl, allyl, benzenesulfonyl or phthaloyl, wherein, when said protecting group for amino group contains an aromatic ring, the aromatic ring may be optionally substituted with one or more of nitro, amino,  $C_1-C_6$  alkyl,  $C_1-C_6$  alkoxy or halogen.

3. (original): The production method according to claim 1, wherein either of  $R^1$  and  $R^2$  is hydrogen and the other is *t*-butoxycarbonyl.

4. (currently amended): The production method according to claim 1 ~~any one of claims 1 to 3~~, wherein reaction step 1 is reaction of an indole derivative having no substituent at the 3-position in the presence of a synthon of formaldehyde.

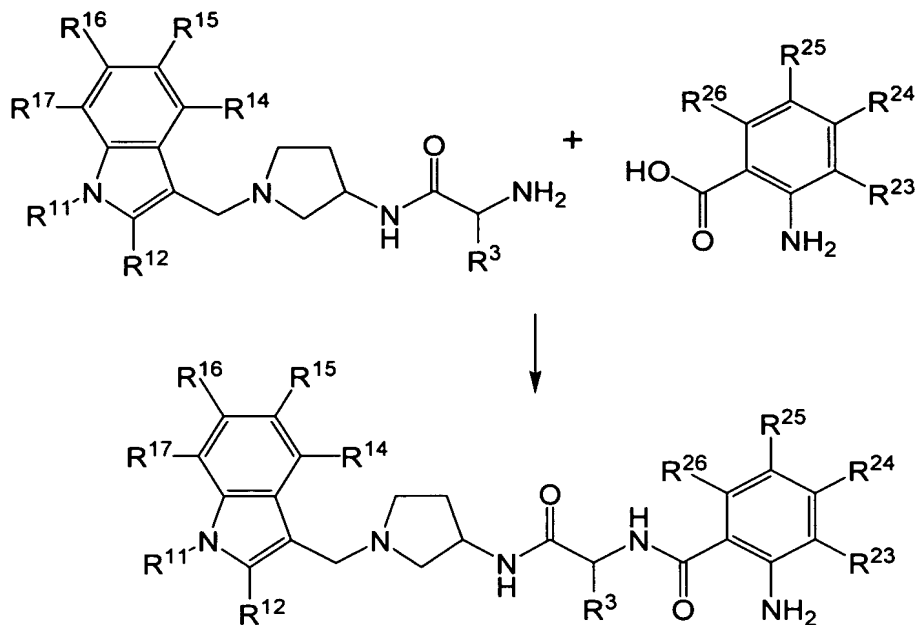
5. (original): The production method according to claim 4, wherein the synthon of formaldehyde is one or more of a compound selected from formalin, paraformaldehyde and trioxane.

6. (currently amended): The production method according to claim 1 ~~any one of claims 1 to 3~~, wherein reaction step 1 is reaction of an indole derivative having a dialkylaminomethyl group at the 3-position.

7. (currently amended): The production method according to claim 1 ~~any one of claims 1 to 6~~, wherein reaction step 2 is removal of the protection group for the amino group by acid hydrolysis.

8. (currently amended): The production method according to claim 1 ~~any one of claims 1 to 6~~, wherein reaction step 2 involves treatment with hydrogen chloride in organic solvent.

9. (original): A method for producing aminopyrrolidine derivatives or salts thereof comprising a condensation step represented by the following reaction formula (II), wherein the condensation step is performed by treatment with an anthranilic acid derivative in an aprotic solvent in the presence of a condensing agent:



(II)

wherein R<sup>3</sup> represents hydrogen or C<sub>1</sub>-C<sub>6</sub> alkyl;

R<sup>11</sup> represents hydrogen, C<sub>1</sub>-C<sub>6</sub> alkyl or C<sub>2</sub>-C<sub>7</sub> alkanoyl;

R<sup>12</sup>, R<sup>14</sup>, R<sup>15</sup>, R<sup>16</sup> and R<sup>17</sup> represent independently hydrogen, halogen, optionally halogenated C<sub>1</sub>-C<sub>6</sub> alkyl, optionally halogenated C<sub>1</sub>-C<sub>6</sub> alkoxy, hydroxyl or C<sub>2</sub>-C<sub>7</sub> alkoxycarbonyl; and

R<sup>23</sup>, R<sup>24</sup>, R<sup>25</sup> and R<sup>26</sup> represent independently hydrogen, halogen, optionally halogenated C<sub>1</sub>-C<sub>6</sub> alkyl, optionally halogenated C<sub>1</sub>-C<sub>6</sub> alkoxy or hydroxyl.

10. (original): The production method according to claim 9, wherein the condensing agent is one or more of a compound selected from 1,3-dicyclohexylcarbodiimide, isobutyl chloroformate, pivaloyl chloride, isovaleryl chloride, 1-ethyl-3-(3-dimethylaminopropyl)carbodiimide, 1-cyclohexyl-3-morpholinoethylcarbodiimide, 1-cyclohexyl-3-(4-diethylaminocyclohexyl)carboximide, *N,N'*-carbonyldiimidazole and

2-chloro-1,3-dimethylimidazolinium chloride.

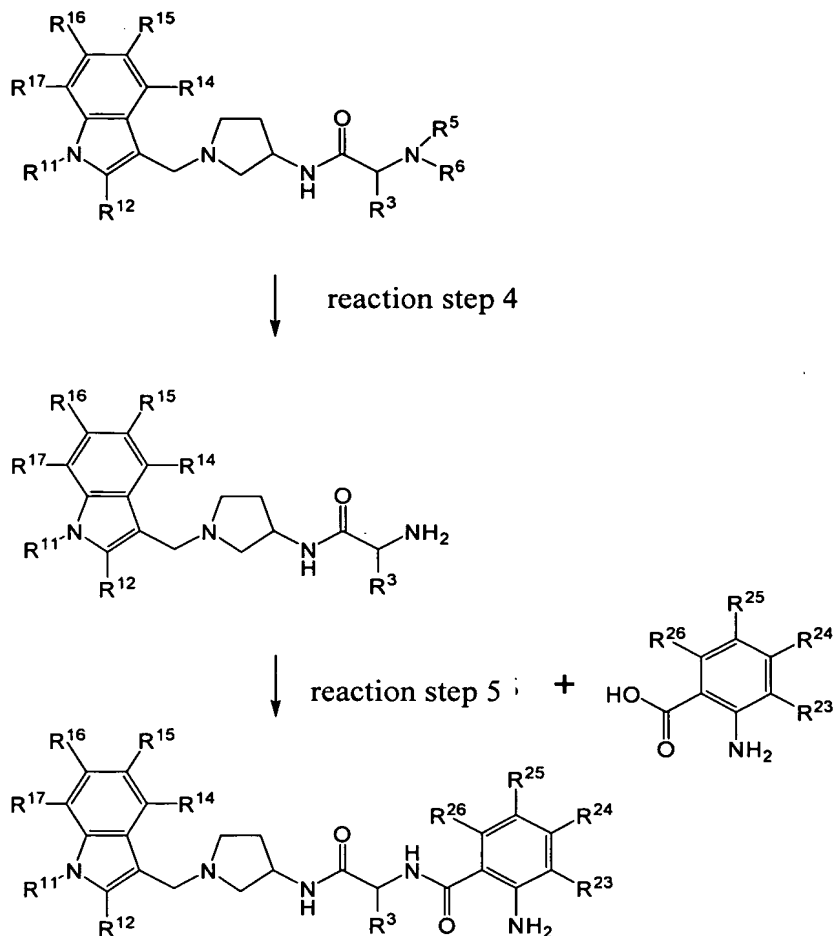
11. (original): The production method according to claim 9, wherein the condensing agent is 1-ethyl-3-(3-dimethylaminopropyl)carbodiimide hydrochloride.

12. (currently amended): The production method according to claim 9~~any one of claims 9 to 11~~, wherein, in said condensation step, are additionally used one or more of an additive selected from *p*-nitrophenol, hydroxysuccinimide, hydroxyphthalimide, 1-hydroxy-1,2,3-benzotriazole, 3-hydroxy-4-oxo-3,4-dihydro-1,2,3-benzotriazine, *N*-hydroxy-5-norbornene-2,3-dicarboximide and ethyl 2-hydroxyimino-2-cyanoacetate.

13. (currently amended): The production method according to claim 9~~any one of claims 9 to 11~~, wherein, in said condensation step, 1-hydroxy-1,2,3-benzotriazole is additionally used as an additive.

14. (currently amended): The production method according to claim 9~~any one of claims 9 to 13~~, wherein, in said condensation step, triethylamine is additionally used.

15. (currently amended): The production method according to claim 9~~any one of claims 9 to 14~~, which further comprises a deprotection step represented by the following reaction step 4:

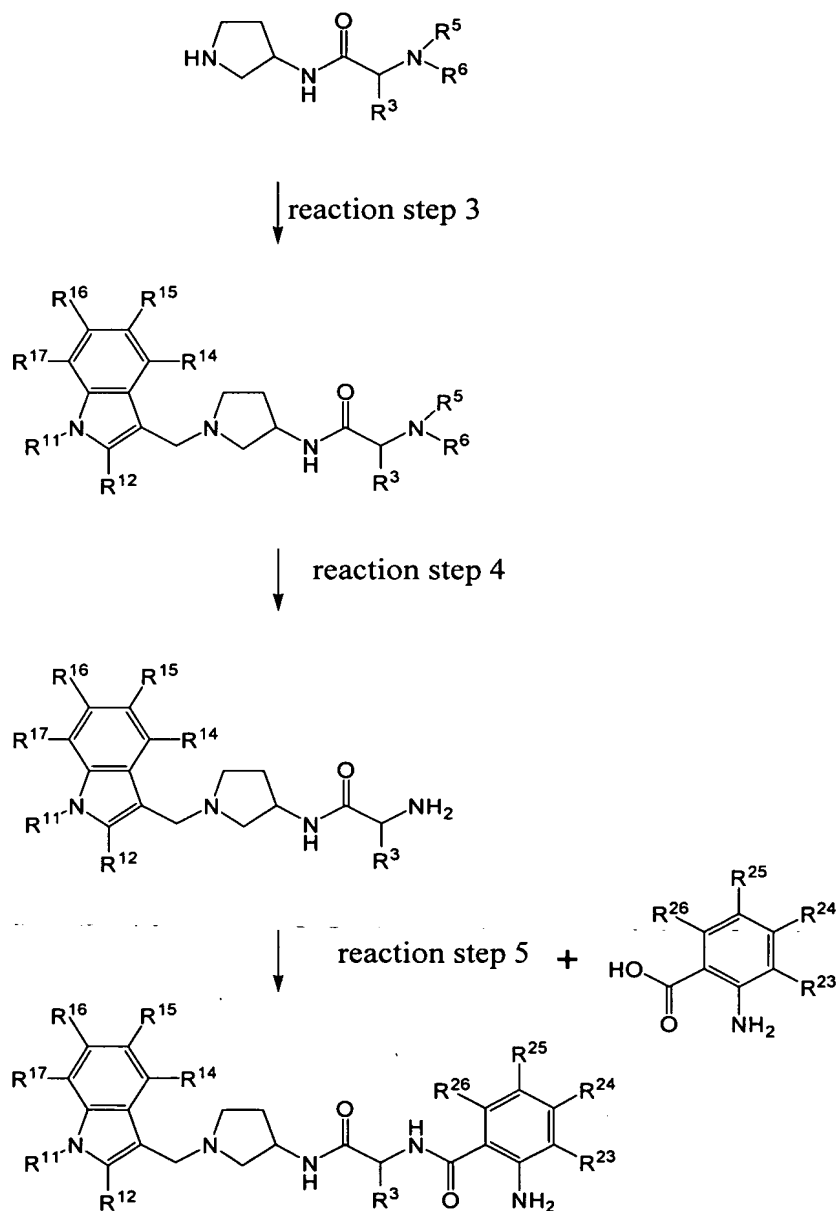


wherein  $R^3$ ,  $R^{11}$ ,  $R^{12}$ ,  $R^{14}$ ,  $R^{15}$ ,  $R^{16}$ ,  $R^{17}$ ,  $R^{23}$ ,  $R^{24}$ ,  $R^{25}$  and  $R^{26}$  are as defined in reaction formula (II);

$R^5$  and  $R^6$  represent independently hydrogen or a protecting group for amino group (wherein  $R^5$  and  $R^6$  may, taken together, form a cyclic structure) except for the case where  $R^5$  and  $R^6$  are simultaneously hydrogen.

16. (original): The production method according to claim 15, wherein said reaction step 4 involves treatment with hydrogen chloride in organic solvent.

17. (currently amended): The production method according to ~~either~~ claim 15 ~~or~~ 16, which further comprises an introduction step of an indole derivative represented by the following reaction step 3:





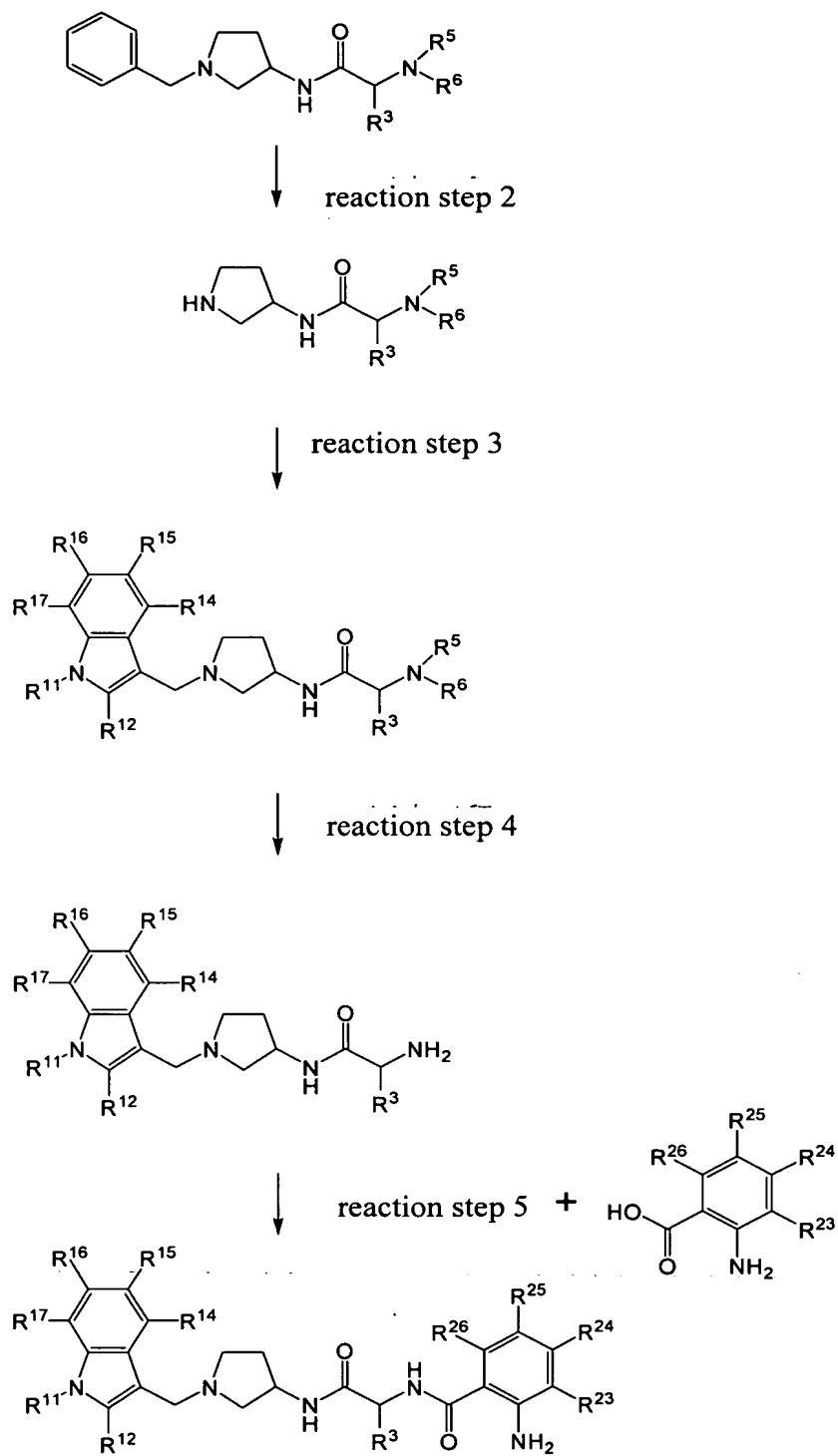
wherein  $R^3$ ,  $R^5$ ,  $R^6$ ,  $R^{11}$ ,  $R^{12}$ ,  $R^{14}$ ,  $R^{15}$ ,  $R^{16}$ ,  $R^{17}$ ,  $R^{23}$ ,  $R^{24}$ ,  $R^{25}$  and  $R^{26}$  are as defined above.

18. (original): The production method according to claim 17, wherein said reaction step 3 is reaction of an indole derivative having no substituent at the 3-position in the presence of a synthon of formaldehyde.

19. (original): The production method according to claim 18, wherein the synthon of formaldehyde is formalin.

20. (original): The production method according to claim 17, wherein said reaction step 3 is reaction of an indole derivative substituted with a dialkylaminomethyl group at the 3-position.

21. (currently amended): The production method according to claim 17~~any one of claims 17 to 20~~, which further comprises a removal step of a benzyl group represented by the following reaction step 2:

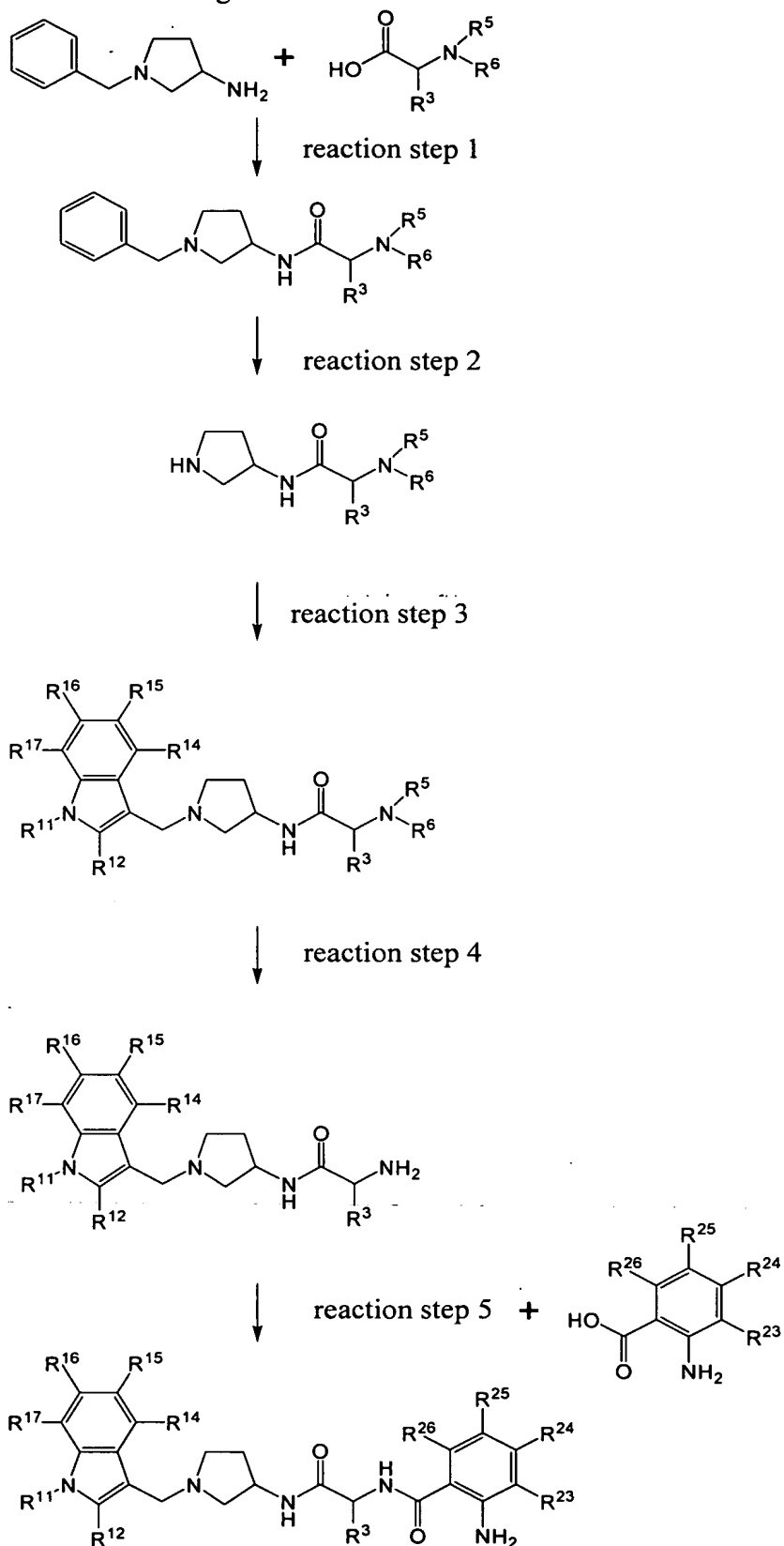


wherein  $R^3$ ,  $R^5$ ,  $R^6$ ,  $R^{11}$ ,  $R^{12}$ ,  $R^{14}$ ,  $R^{15}$ ,  $R^{16}$ ,  $R^{17}$ ,  $R^{23}$ ,  $R^{24}$ ,  $R^{25}$  and  $R^{26}$  are as defined above.

22. (original): The production method according to claim 21, wherein, in said reaction step 2, a hydrogen source is used in the presence of palladium catalyst.

23. (original): The production method according to claim 22, wherein the hydrogen source is gaseous hydrogen.

24. (currently amended): The production method according to claim 21~~any one of claims 21 to 23~~, which further comprises a condensation step with an amino acid derivative represented by the following reaction step 1:



wherein  $R^3$ ,  $R^5$ ,  $R^6$ ,  $R^{11}$ ,  $R^{12}$ ,  $R^{14}$ ,  $R^{15}$ ,  $R^{16}$ ,  $R^{17}$ ,  $R^{23}$ ,  $R^{24}$ ,  $R^{25}$  and  $R^{26}$  are as defined above.

25. (original): The production method according to claim 24, wherein, in said reaction step 1, are used one or more of a condensing agent selected from 1,3-dicyclohexylcarbodiimide, isobutyl chloroformate, pivaloyl chloride, isovaleryl chloride, 1-ethyl-3-(3-dimethylaminopropyl)carbodiimide, 1-cyclohexyl-3-morpholinoethylcarbodiimide, 1-cyclohexyl-3-(4-diethylaminocyclohexyl)carboximide, *N,N'*-carbonyldiimidazole and 2-chloro-1,3-dimethylimidazolinium chloride.

26. (original): The production method according to claim 24, wherein, in said reaction step 1, 1-ethyl-3-(3-dimethylaminopropyl)carbodiimide is used as a condensing agent.

27. (currently amended): The production method according to claim 24~~any one of claims 24 to 26~~, wherein, in said reaction step 1, are additionally used one or more of an additive selected from *p*-nitrophenol, hydroxysuccinimide, hydroxyphthalimide, 1-hydroxy-1,2,3-benzotriazole, 3-hydroxy-4-oxo-3,4-dihydro-1,2,3-benzotriazine, *N*-hydroxy-5-norbornene-2,3-dicarboximide and ethyl 2-hydroxyimino-2-cyanoacetate.

28. (currently amended): The production method according to claim 24~~any one of claims 24 to 26~~, wherein, in said reaction step 1, 1-hydroxy-1,2,3-benzotriazole is additionally used as an additive.

29. (currently amended): The production method according to claim 24~~any one of claims 24 to 28~~, wherein, in said reaction step 1, triethylamine is additionally used.

30. (currently amended): The production method according to claim 15~~any one of claims 15 to 29~~, wherein the protecting group for amino group as R<sup>5</sup> and R<sup>6</sup> is methoxycarbonyl, *t*-butoxycarbonyl, benzyloxycarbonyl, allyloxycarbonyl, formyl, acetyl, benzoyl, methyl, ethyl, allyl, benzenesulfonyl or phthaloyl, wherein, when said protecting group for the amino group contains an aromatic ring, the aromatic ring may be optionally substituted with one or more of nitro, amino, C<sub>1</sub>–C<sub>6</sub> alkyl, C<sub>1</sub>–C<sub>6</sub> alkoxy or halogen.

31. (currently amended): The production method according to claim 15~~any one of claims 15 to 29~~, wherein either of R<sup>5</sup> and R<sup>6</sup> is hydrogen and the other is *t*-butoxycarbonyl.

32. (currently amended): The production method according to claim 1~~any one of claims 1 to 31~~, wherein R<sup>3</sup> is hydrogen.

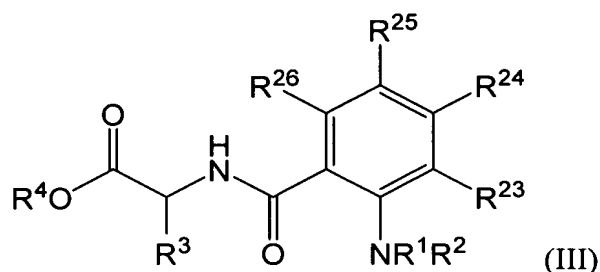
33. (currently amended): The production method according to claim 1~~any one of claims 1 to 32~~, wherein R<sup>11</sup>, R<sup>12</sup>, R<sup>14</sup>, R<sup>15</sup> and R<sup>17</sup> are all hydrogen.

34. (currently amended): The production method according to claim 1~~any one of claims 1 to 33~~, wherein R<sup>16</sup> is methyl.

35. (currently amended): The production method according to claim 1 ~~any one of claims 1 to 34~~, wherein R<sup>23</sup>, R<sup>24</sup> and R<sup>26</sup> are all hydrogen.

36. (currently amended): The production method according to claim 1 ~~any one of claims 1 to 35~~, wherein R<sup>25</sup> is trifluoromethoxy.

37. (original): A compound or a salt thereof represented by the following formula (III):



wherein R<sup>1</sup> and R<sup>2</sup> represent independently hydrogen or a protecting group for amino group (wherein R<sup>1</sup> and R<sup>2</sup> may, taken together, form a cyclic structure);

R<sup>3</sup> represents hydrogen or C<sub>1</sub>–C<sub>6</sub> alkyl;

R<sup>4</sup> represents hydrogen or C<sub>1</sub>–C<sub>6</sub> alkyl; and

R<sup>23</sup>, R<sup>24</sup>, R<sup>25</sup> and R<sup>26</sup> represent independently hydrogen, halogen, optionally halogenated C<sub>1</sub>–C<sub>6</sub> alkyl, optionally halogenated C<sub>1</sub>–C<sub>6</sub> alkoxy or hydroxyl.

38. (original): The compound or a salt thereof according to claim 37, wherein said protecting group of amino group as R<sup>1</sup> and R<sup>2</sup> is methoxycarbonyl, *t*-butoxycarbonyl, benzyloxycarbonyl, allyloxycarbonyl, formyl, acetyl, benzoyl, methyl, ethyl, allyl, benzenesulfonyl or phthaloyl,

wherein, when said protecting group for the amino group contains an aromatic ring, the aromatic ring may be substituted with one or more of nitro, amino, C<sub>1</sub>–C<sub>6</sub> alkyl, C<sub>1</sub>–C<sub>6</sub> alkoxy or halogen.

39. (original): The compound or a salt thereof according to claim 37, wherein either of R<sup>1</sup> and R<sup>2</sup> is hydrogen and the other is hydrogen, *t*-butoxycarbonyl or benzyloxycarbonyl.

40. (currently amended): The compound or a salt thereof according to claim 37~~any one of claims 37 to 39~~, wherein R<sup>3</sup> is hydrogen.

41. (currently amended): The compound or a salt thereof according to claim 37~~any one of claims 37 to 40~~, wherein R<sup>4</sup> is hydrogen.

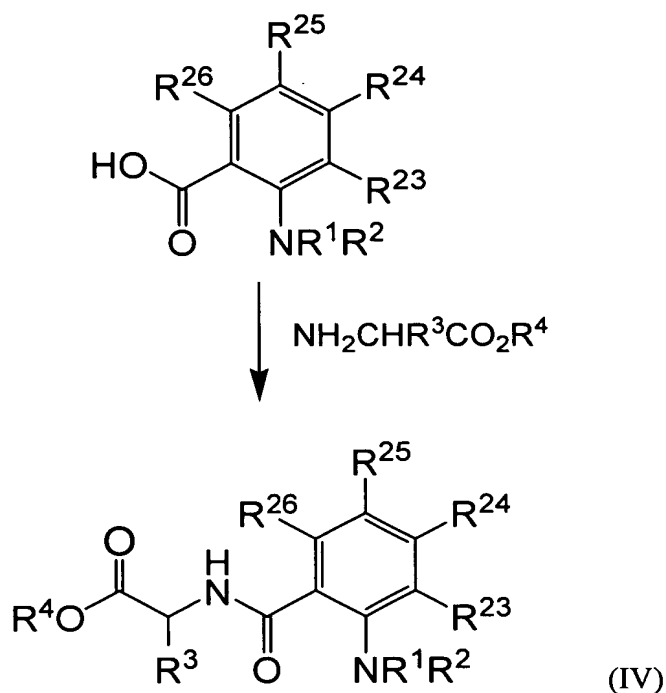
42. (currently amended): The compound or a salt thereof according to claim 37~~any one of claims 37 to 41~~, wherein R<sup>23</sup>, R<sup>24</sup> and R<sup>26</sup> are all hydrogen.

43. (currently amended): The compound or a salt thereof according to claim 37~~any one of claims 37 to 42~~, wherein R<sup>25</sup> is C<sub>1</sub>–C<sub>6</sub> alkoxy substituted with halogen.

44. (currently amended): The compound or a salt thereof according to claim 37~~any one of claims 37 to 42~~, wherein R<sup>25</sup> is trifluoromethoxy.



45. (original): A production method of an anthranilamide derivative or a salt thereof comprising a reaction step represented by the following formula (IV):



wherein:

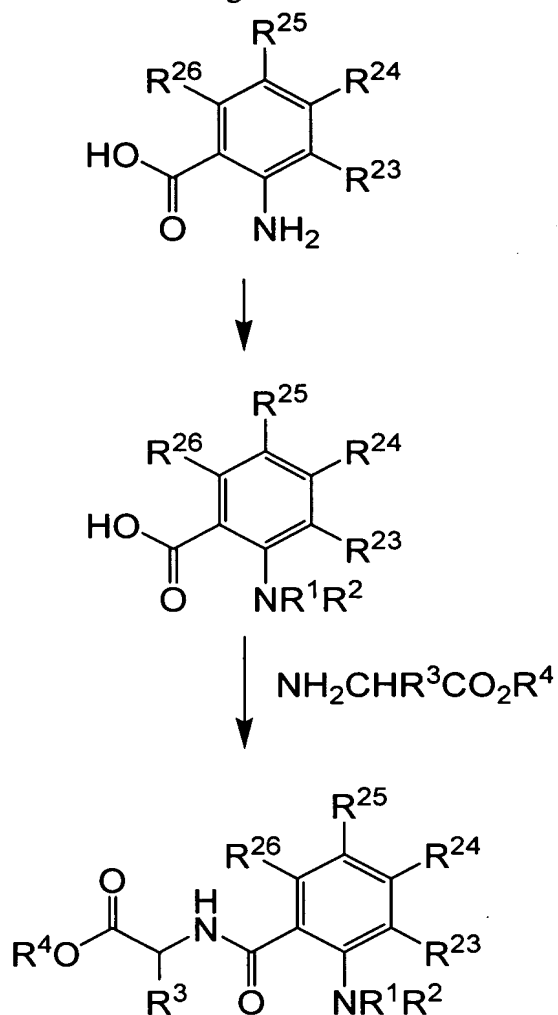
$\text{R}^1$  and  $\text{R}^2$  represent independently hydrogen or a protecting group for amino group (wherein  $\text{R}^1$  and  $\text{R}^2$  may, taken together, form a cyclic structure);

$\text{R}^3$  represents hydrogen or  $\text{C}_1\text{--C}_6$  alkyl;

$\text{R}^4$  represents hydrogen or  $\text{C}_1\text{--C}_6$  alkyl;

$\text{R}^{23}$ ,  $\text{R}^{24}$ ,  $\text{R}^{25}$  and  $\text{R}^{26}$  represent independently hydrogen, halogen, optionally halogenated  $\text{C}_1\text{--C}_6$  alkyl, optionally halogenated  $\text{C}_1\text{--C}_6$  alkoxy or hydroxyl.

46. (original): The production method according to claim 45 which further comprises a reaction step represented by the first step in the following reaction formula:



wherein  $\text{R}^1$ ,  $\text{R}^2$ ,  $\text{R}^3$ ,  $\text{R}^4$ ,  $\text{R}^{23}$ ,  $\text{R}^{24}$ ,  $\text{R}^{25}$  and  $\text{R}^{26}$  are as defined above.

47. (currently amended): The production method according to ~~either~~ claim 45 ~~or~~ 46, wherein the protecting group for amino group as  $\text{R}^1$  or  $\text{R}^2$  is methoxycarbonyl, *t*-butoxycarbonyl, benzyloxycarbonyl, allyloxycarbonyl, formyl, acetyl, benzoyl, methyl, ethyl, allyl, benzenesulfonyl or phthaloyl, wherein, when said protecting group for the amino group contains

an aromatic ring, the aromatic ring may be substituted with one or more of nitro, amino, C<sub>1</sub>–C<sub>6</sub> alkyl, C<sub>1</sub>–C<sub>6</sub> alkoxy or halogen.

48. (currently amended): The production method according to ~~either claim 45 or 46~~, wherein either of R<sup>1</sup> and R<sup>2</sup> is hydrogen and the other is hydrogen, *t*-butoxycarbonyl or benzyloxycarbonyl.

49. (currently amended): The production method according to claim 45~~any one of claims 45 to 48~~, wherein R<sup>3</sup> is hydrogen.

50. (currently amended): The production method according to claim 45~~any one of claims 45 to 49~~, wherein R<sup>23</sup>, R<sup>24</sup> and R<sup>26</sup> are all hydrogen.

51. (currently amended): The production method according to claim 45~~any one of claims 45 to 50~~, wherein R<sup>25</sup> is C<sub>1</sub>–C<sub>6</sub> alkoxy substituted with halogen.

52. (currently amended): The production method according to claim 45~~any one of claims 45 to 50~~, wherein R<sup>25</sup> is trifluoromethoxy.